REMARKS

Claims 1, 6, 9-11 are pending in the present application. Claims 9-10 are withdrawn from consideration. Claims 1, 6, 9-10 are herein amended. Claims 2 and 5 are herein canceled. No new matter has been presented.

Rejections under 35 USC §112, First Paragraph

Claims 5-6 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Claim 5 has been cancelled. Claim 6 does not recite "iron atoms of more than 90 atomic percent." Thus, the rejection should be withdrawn.

Rejections under 35 USC §112, Second Paragraph

Claim 5 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite because claim 5 recites whisker comprising less than 10 atomic percent non-iron metal atoms and oxygen atoms.

Claim 5 has been cancelled. Thus, the rejection has become moot.

Rejections under 35 USC §102(b)

Claims 1-2, 5-6 and 11 were rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (US 2002/0136928).

As shown in present FIG. 7, the wiskers in the present invention is formed as magnetite crystals on the substrate by chemical combination between iron atoms supplied from the alloy substrate and oxygen atoms supplied from the atmosphere.

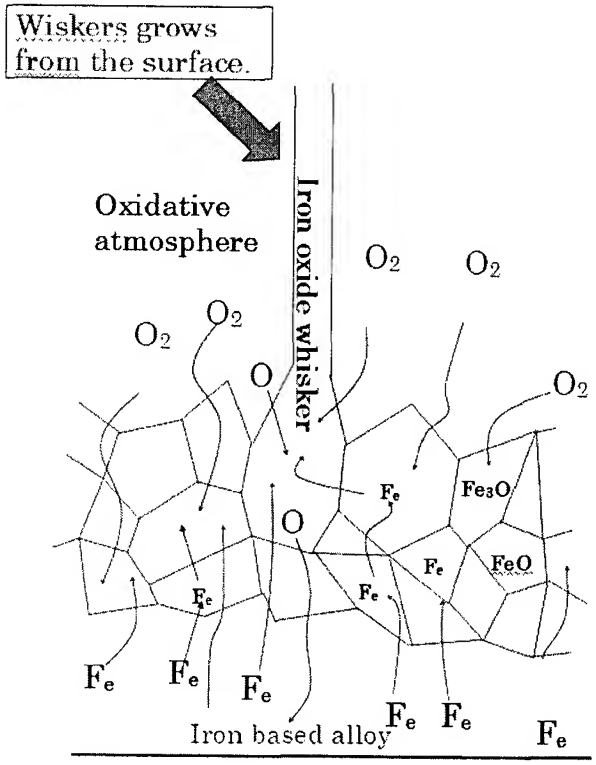


FIG. 7

Therefore, the iron oxide whisker erecting structure has following characteristics:

--The substrate and wiskers are strongly combined.
--The wiskers grow vertically to the substrate.
--The substrate and the wiskers are ion conductively connected, and the structure can be an ion emitting source.
--The wiskers can work as a catalyst providing contact surfaces to the gas which flows in the space between the wiskers.

Responding to Applicants' previous response, the Examiner alleged as follows:

> Hayashi teaches acicular hematite particles and acicular particles are known to be filamentary crystals, see, for example, as an illustration of an Examiner's position a publication of Karpinos (Institute of Problems in Materials Science, No12, p. 782, 1978) providing acicular filamentary crystals. In addition, whiskers can be aggregated, see for example, Yoshinaka (US 5,091,765, abstract) disclosing an aggregate of whiskers. The claims are directed to the presence of whiskers with a specific aspect ratio. Whether the whiskers are aggregated or not, the whiskers are present on the substrate and have the specific length to width ratio (aspect ratio) as claimed. Applicant's claim language does not preclude the presence of the whiskers in an aggregated form. Finally, as it was shown in the rejection section, Hayashi teaches acicular particles, oriented in major axis direction with the claimed aspect ratio. Thus, based on the aforementioned, the Hayashi iron oxide particles are considered to be whiskers and accordingly, for the reasons stated above, the rejection of claims 1-2 and 5-6 are maintained.

(Office Action, page 5, line 1-14).

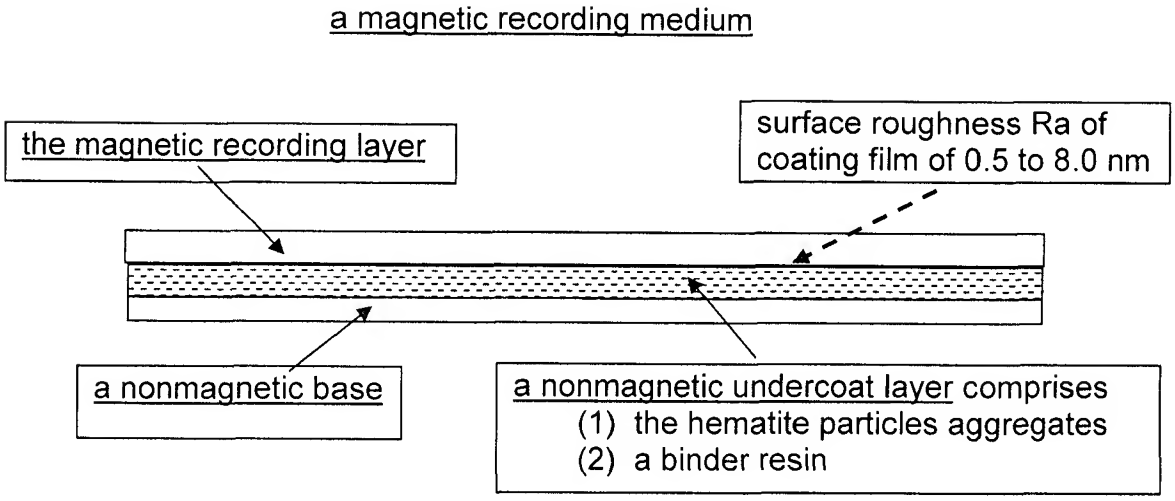
Claim 1 has been amended to recite "wherein the iron oxide whiskers are crystallographically combined with adjacent crystal grains of the substrate of iron based alloy."

Hayashi discloses hematite particles aggregates comprising aggregates of acicular hematite particles oriented in a major axis direction. The acicular hematite particles have an average major axis diameter of 0.005 to 0.3 μm and an average manor axis diameter of 0.0005 to 0.10 μm. The acicular hematite particles are mixed with resin solution, and the mixture is applied onto a non-magnetic substrate film and dried. Hayashi describes the process at paragraphs [0015] through [0021].

Hayashi's nonmagnetic substrate for a magnetic recording medium comprises a nonmagnetic base, and a nonmagnetic undercoat layer formed on the nonmagnetic base film which comprises the hematite particles aggregates. Hayashi's process includes the steps as follows:

(i) the hematite particles aggregates are mixed with a binder resin solution,
(iii) then, the mixture is applied onto a non-magnetic basefilm using an applicator and then dried, thereby forming magnetic undercoat layer; and
(iv) the thus obtained dried magnetic undercoat layer is subjected to calendering treatment.

The product is a magnetic tape shown below:



As described at paragraphs [0037] in Hayashi, the surface becomes extremely smooth. This indicates that the acicular hematite particles are buried and bound on the film surface by the binder regardless of the aggregates' shape (ratio of major axis diameter and minor axis diameter, thickness, etc). The major axis of the acicular hematite particles is generally oriented parallel to the film surface by smoothing by pressing with calendar. This is a structure oriented in a major axis direction. Thus, in Hayashi, the acicular hematite particles are buried in a resin film layer, but they are not directly combined with the substrate.

Moreover, as described at [0108] in Hayashi, the surface has gloss of coating film of usually 170 to 300%; a surface roughness Ra of a coating film of usually not more than 8.5nm. The acicular hematite particles are not projecting from the surface.

Thus, in Hayashi's structure, the acicular hematite particles are in the resin paint film, and resin is filled between the acicular hematite particles. Thus, Hayashi's structure will not work as a catalyst.

In Hayashi's structure, the acicular hematite particles are oriented parallel to the substrate surface. Also, the acicular hematite particles are neither directly combined with the substrate nor crystallographically combined with the substrate. Thus, there is no ion conductivity between the substrate and the acicular hematite particles.

Thus, Hayash et al. does not teach or suggest long, among other things, the iron oxide whisker erecting structure, "wherein the iron oxide whiskers are crystallographically combined with adjacent crystal grains of the substrate of iron based alloy." Also, Hayashi et al. does not teach or suggest how such a whisker is obtained.

For at least these reasons, claim 1 patentably distinguishes over Hayash et al. Claims 2, 6 and 11, depending from claim 1, also patentably distinguish over Hayash et al. for at least the same reasons.

Request For Rejoinder

Withdrawn claim 9 has been amended to recite "wherein whisker erecting structure, comprises: a substrate of iron based alloy having a surface; and iron oxide whiskers of aspect

ratio higher than 20 erected on said surface, wherein the iron oxide whiskers are crystallographically combined with adjacent crystal particles of the substrate of iron based alloy." Thus, claim 9 is limited to a method of making an iron oxide whisker erecting structure of claim 1. The same thing can be said about claims 10 and 11.

Thus, claims 1, 6, 9-11 have the same or corresponding special technical features and satisfy unity of invention under 37 CFR §1.475(b) and PCT Rule 13.2.

Therefore, rejoinder of claims 9-11 is respectfully requested.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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